UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/751,649	12/29/2000	Ashok Singhal	M-8495 US	9244

			EXAMINER
32566	7590	09/12/2005	NGUYEN, STEVE N

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ART UNIT	PAPER NUMBER
2133	

DATE MAILED: 09/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/751,649	SINGHAL ET AL.
	Examiner	Art Unit	
	Steve Nguyen	2133	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _27 July 2005_.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-6 and 10-13_ is/are pending in the application.

    4a) Of the above claim(s) _4-6_ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-3 and 10-13_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) _4-6_ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _29 December 2000_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____ .

DETAILED ACTION

1.   Claims 1-3 and 10-13 are pending. Non-elected claims 7-9 in the prior Office

Action are cancelled. Claims 10-13 are newly submitted.

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

I.   Claims 1-3 and 10-12, drawn to a communication link protocol for

communicating between nodes of an interconnect system via a

communication link with built in self testing, classified in class 714,

subclass 733.

II.   Claims 4-6, drawn to a communication link protocol for communicating

between nodes of an interconnect system via a communication link with a

link watchdog communication and transmitting control information in

command packets and acknowledgement packets, classified in class 714,

subclass 712.

The inventions are distinct, each from the other because of the following reasons:

Inventions Group I and Group II are related as subcombinations disclosed as

usable together in a single combination. The subcombinations are distinct from each

other if they are shown to be separately usable. In the instant case, invention Group I

has separate utility such as a communication link protocol with a BIST command for

testing the functionality of the communication link. In the instant case, invention Group

II has separate utility such as a communication link protocol comprising a link watchdog

communication receiving piggybacked acknowledgement packets in response to a

network test. See MPEP § 806.05(d).

Because these inventions are distinct for the reasons given above and have

acquired a separate status in the art as shown by their different classification, restriction

for examination purposes as indicated is proper.

During a telephone conversation with David C. Hsia on 9/1/2005 a provisional

election was made without traverse to prosecute the invention of Group I, claims 1-3

and 10-12. Affirmation of this election must be made by applicant in replying to this

Office action. Claims 4-6 are withdrawn from further consideration by the examiner, 37

CFR 1.142(b), as being drawn to a non-elected invention.

Response to Arguments

2.   Applicant's arguments filed 7/27/2005 have been fully considered but they are

not persuasive.

The Applicant argues that "the lines cited against (1) the DMA write command

and (2) the memory copy write command all describe the operation of a reflected write.

The reflected write of Steely, Jr. et al. cannot be both (1) the DMA write command and

(2) the memory copy write command recited in claim 1."

The Examiner asserts that Steely teaches the above limitations as originally

cited. In the description of col. 7, lines 13-32, Steely discloses an example of a write

operation from a local node to a remote node (see col. 6, lines 47-50). Steely further teaches a direct memory access (DMA) command (col. 7, lines 29-30) for writing a block of data from a local node to a remote node (col. 7, lines 15-16) via the communication link (col. 9, lines 8-9).

The system of Steely is directed to a reflective memory parallel computing system, disclosed in col. 1, lines 52-67. A significant feature of a reflective memory system is the ability to "reflect" data written into a specific portion of memory to other nodes of the network (col. 1, lines 65-67). Thus, the generic description of the data write process by Steely in col. 7, lines 13-32 also applies for a reflective memory write process. In particular, Steely teaches the memory copy write command in col. 8, lines 41-43.

The Examiner disagrees with the Applicant and maintains all rejections of claims 1-3. All amendments and arguments by the Applicant have been considered. It is the Examiner's conclusion that claims 1-6 and 10-13 are not patentably distinct or non-obvious over the prior art of record. Therefore, the rejection is maintained.

Claim Objections

3.   Claim 13 is objected to for reciting a negative limitation defining what the invention is not, rather than pointing out the invention. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4.   Claim 13 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 13 recites the limitation, "wherein said writing a line of memory from a local node to a remote node is devoid of any address mapping." However, this limitation is not supported by the original specification. The Applicant contends that new claim 13 is supported by page 28, line 4 to page 29, line 22. However, the lines recited above only disclose a method for communicating data from a local node to a remote node via a communication link using a link protocol. Merged data from a local node is written into the cluster memory at the remote node (see page 29, lines 11-22). Nowhere does the Applicant disclose that the link protocol operates without the use of address mapping.

5.   Claim 13 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 13 recites the limitation, "wherein said writing a line of memory from a local

node to a remote node is devoid of any address mapping." However, the specification

merely teaches a method for communicating data from a local node to a remote node

via a communication link using a link protocol, wherein merged data from a local node is

written into the cluster memory at the remote node (see page 29, lines 11-22). The

specification does not disclose doing so without the use of address mapping. It is

unclear how data can be communicated in the system without mapping to the

destination address of the remote memory.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1.   Determining the scope and contents of the prior art.
2.   Ascertaining the differences between the prior art and the claims at issue.
3.   Resolving the level of ordinary skill in the pertinent art.
4.   Considering objective evidence present in the application indicating obviousness or nonobviousness.

6.   Claims 1-3, 10, and 12 rejected under 35 U.S.C. 103(a) as being unpatentable over Steely, Jr. et al (US Pat. 6,049,889; hereafter referred to as Steely) in view of Grivna (US Pat. 5,850,556).

As per claim 1:

Steely teaches a communication link protocol for communicating between nodes of an interconnect system via a communication link, the communication link protocol comprising:

- a direct memory access (DMA) command for writing a block of data from a local node to a remote node via the communication link (col. 7, lines 26-32);

- an administrative write command for writing data from a local node to registers in a remote node via the communication link for administrative purposes (col. 5, lines 36-45);

- a memory copy write command for writing a line of memory from a local node to a remote node via the communication link when any data is written into that line of memory (col. 6, lines 46-47; col. 7, lines 13-15).

Not explicitly disclosed by Steely is a built in self test (BIST) command for testing the functionality of the communication link. However, Grivna teaches a communication system which uses a BIST testing logic for testing the functionality of the communication link (col. 6, lines 52-56). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine a BIST testing architecture as described by Grivna with the system of Steely to issue a BIST command for testing the functionality of the communication link. This modification would have been obvious

to one of ordinary skill in the art, at the time the invention was made, because one of

ordinary skill in the art would have recognized that BIST would have provided the

advantage of allowing diagnostics of the communication link, as described by Grivna in

column 6, lines 52-56.

As per claim 2:

Steely and Grivna teach the communication link protocol of Claim 1 wherein each

command is conveyed between a local node and a remote node in the form of a

respective command packet (col. 9, lines 8-9).

As per claim 3:

Steely and Grivna teach the communication link protocol of Claim 2 wherein each

respective command packet carries information for at least one command flag (col. 9,

lines 18-23; the DV bits are a command flag that dictate the occurrence of an idle

cycle).

As per claim 10:

Steely further teaches the communication link protocol of Claim 1, wherein said

writing a block of data from a local node to a remote node comprises copying the block

of data from a local memory of the local node to a remote memory of the remote node

(col. 8, lines 41-43).

As per claim 12:

Steely further teaches the communication link protocol of Claim 1, wherein said

writing a line of memory from a local node to a remote node comprises reading existing

data from the line of memory in a local memory of the local node, merging new data

with the existing data, and writing merged data to a corresponding line of memory in a

remote memory of the remote node (col. 6, lines 36-42; Steely discloses parity

computation and checking at the nodes. Parity is computed at the transmitting node by

reading existing data and merging newly computed parity data with the existing data.

The merged data comprising the data with its parity bits are then transmitted to the

receiver).

7.   Claim 11 rejected under 35 U.S.C. 103(a) as being unpatentable over Steely in

view of Grivna as applied to claim 1 above, and further in view of Gunsaulus et al (US

Pat. 5,914,970; hereinafter referred to as Gunsualus).

As per claim 11:

        Steely and Grivna teach the communication link protocol of claim 1 above. Not

explicitly disclosed is said writing a block of data from a local node to a remote node

comprises computing parity over multiple blocks of data from a local memory of the

local node and writing the parity to a remote memory of the remote node. However,

Gunsaulus in an analogous art teaches computing parity for a number of memory

devices and writing the parity in one dedicated memory device (col. 1, lines 46-52).

        Therefore, it would have been obvious to a person of ordinary skill in the art at

the time the invention was made to compute parity over multiple blocks of data and

write the parity to a remote memory of the remote node. This modification would have

been obvious to one of ordinary skill in the art, at the time the invention was made,

because one of ordinary skill in the art would have recognized that using one memory

device for parity storage reduces the number of memory devices needed for storing

parity, as disclosed by Gunsaulus in col. 1, lines 52-55.

Conclusion

8.   Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Steve Nguyen whose telephone number is (571) 272-

7214. The examiner can normally be reached on M-F, 9am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Steve Nguyen
Examiner
Art Unit 2133

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